

What is claimed is:

1. Metal powder comprising:
  - a ferromagnetic metal powder;
  - a coating material to coat a surface of the ferromagnetic metal powder; and,
  - a coated metal powder coated on the surface of the ferromagnetic metal powder with the coating material;wherein the coating material is a phosphoric acid compound which contains aluminum.
2. The metal powder according to claim 1, wherein the ferromagnetic metal powder comprises at least one powder selected from the group consisting of iron powder, Fe-Si alloyed powder, Fe-Al alloyed powder, Fe-Ni alloyed powder, sendust powder, and iron-based amorphous alloyed powder.
3. The metal powder according to claim 1, wherein the phosphoric acid compound containing aluminum in the coating material satisfies the following formula:
$$1 \leq P/M \leq 10$$
wherein P (mol) indicates the phosphorus content of the coating material, and M (mol) indicates the overall metal content of the coating material.
4. The metal powder according to claim 3, wherein the phosphoric acid compound containing aluminum in the coating material satisfies the following formula:
$$2 \leq P/M \leq 3$$
wherein P (mol) indicates the phosphorus content of the coating material, and M (mol) indicates the overall metal content of the coating material.
5. The metal powder according to claim 1, wherein the number of moles of the phosphoric acid compound is in the range  $0.3 \leq \alpha \leq 1$ , and wherein the number of moles of all the metal elements in the coating material is M, the number of moles of the aluminum-element in the coating material is  $\alpha M$  ( $0 \leq \alpha \leq 1$ ), and the number of moles of the metal component other than the elements in the operating material is  $(1-\alpha)M$ .

6. The metal powder according to claim 1, wherein the phosphoric acid compound in the coating material comprises at least one selected from the group consisting of metaphosphoric acid, pyrophosphoric acid, orthophosphoric acid, triphosphoric acid, tetraphosphoric acid, phosphoric acid monoesters, monomethylphosphoric acid, monooctylphosphoric acid, monophenylphosphoric acid, and their corresponding salts.
7. The metal powder according to claim 1, wherein the metal compound containing aluminum in the coating material comprises at least one compound selected from the group consisting of aluminum oxide, aluminum nitrate, aluminum acetate, aluminum hydroxide, aluminum phosphate, and aluminum chloride.
8. The metal powder according to claim 1, further comprising an organic resin.
9. The metal powder according to claim 8, wherein the organic resin comprises at least one resin selected from the group consisting of epoxy resin, phenolic resin, silicone resin, amide resin and imide resin.
10. The metal powder according to claim 1, further comprising an oxide.
11. The metal powder according to claim 1, further comprising a surfactant and a silane compound.
12. The metal powder according to claim 1, wherein the amount of the coating material to coat the surface of the metal powder is within a range of 0.01 to 5 mass % of the total amount of the metal powder.
13. A powder magnetic core comprising:
  - a ferromagnetic metal powder ;
  - a coating material to coat the surface of the ferromagnetic metal powder; and
  - a coated metal powder coated on the surface of the ferromagnetic metal powder with the coating material; and
  - the powder magnetic core compacted by submitting the coated metal powder to pressure;

wherein the coating material is a phosphoric acid compound containing aluminum.

14. The powder magnetic core according to claim 13, wherein the aluminum-containing phosphoric acid compound in the coating material satisfies the following formula:

$$1 \leq P/M \leq 10$$

wherein P (mol) indicates the phosphorus content of the coating material, and M(mol) indicates the overall metal content of the coating material.

15. The powder magnetic core according to claim 13, wherein the phosphoric acid compound containing aluminum compound in the coating material the following formula:

$$2 \leq P/M \leq 3$$

wherein P (mol) indicates the phosphorus content of the coating material, and M (mol) indicates the overall metal content of the coating material.